

WHAT IS CLAIMED IS:

1. A bicycle rim comprising:
  - an outer annular portion adapted to receive a tire thereon, said outer annular portion having an outer spoke attachment opening;
  - an inner annular portion fixedly coupled with said outer annular portion to form an annular hollow area therebetween, said inner annular portion having an inner spoke attachment opening aligned with said outer spoke attachment opening;
  - a first tubular spoke attachment portion fixedly coupled to said outer annular portion at said outer spoke attachment opening; and
  - a second tubular spoke attachment portion fixedly coupled to said inner annular portion at said inner spoke attachment opening;
  - said first and second tubular spoke attachment portions defining a spoke receiving space, at least one of said first and second tubular spoke attachment portions being heat fused to one of said outer and inner annular portions, respectively.
2. The bicycle rim according to claim 1, wherein  
said first tubular spoke attachment portion is heat fused to said outer annular portion.
3. The bicycle rim according to claim 2, wherein  
said second tubular spoke attachment portion is heat fused to said inner annular portion.
4. The bicycle rim according to claim 1, wherein  
said second tubular spoke attachment portion is heat fused to said inner annular portion.
5. The bicycle rim according to claim 1, wherein  
said first and second tubular spoke attachment portions are integrally formed together as a one-piece, unitary member with a longitudinally extending internal passageway that forms said spoke receiving space.
6. The bicycle rim according to claim 5, wherein  
said internal passageway is at least partially threaded.

7. The bicycle rim according to claim 6, wherein said internal passageway is a through bore.
8. The bicycle rim according to claim 6, wherein said internal passageway is a blind bore.
9. The bicycle rim according to claim 5, wherein said internal passageway is a stepped through bore with an internal abutment surface that forms said spoke receiving space.
10. The bicycle rim according to claim 1, wherein said first and second tubular spoke attachment portions are two separate members.
11. The bicycle rim according to claim 10, wherein each of the first and second tubular spoke attachment portions has an internal bore formed therein that is at least partially threaded such that said internal bores of said first and second tubular spoke attachment portions at least partially define said spoke receiving space.
12. The bicycle rim according to claim 1, wherein said first tubular spoke attachment portion is at least partially located within said outer spoke attachment opening; and said second tubular spoke attachment portion is at least partially located within said inner spoke attachment opening.
13. The bicycle rim according to claim 12, wherein said first tubular spoke attachment portion extends radially inwardly from said outer annular portion into said hollow area of said rim; and said second tubular spoke attachment portion extends radially outwardly from said inner annular portion into said hollow area of said rim.
14. The bicycle rim according to claim 1, wherein

said at least one of said first and second tubular spoke attachment portions that is heat fused to said one of said outer and inner annular portions, respectively, is welded to said one of said outer and inner annular portions, respectively.

15. The bicycle rim according to claim 1, wherein  
said at least one of said first and second tubular spoke attachment portions that is heat fused to said one of said outer and inner annular portions, respectively, is brazed to said one of said outer and inner annular portions, respectively.

16. The bicycle rim according to claim 1, wherein  
said outer annular portion includes a plurality of circumferentially spaced outer spoke attachment openings with a plurality of first tubular spoke attachment portions fixedly coupled to said outer annular portion at said outer spoke attachment openings;  
said inner annular portion includes a plurality of circumferentially spaced inner spoke attachment openings with a plurality of first tubular spoke attachment portions fixedly coupled to said inner annular portion at said inner spoke attachment openings, said inner spoke attachment openings being aligned with said outer spoke attachment openings; and  
at least one of said first tubular spoke attachment portions and said second tubular spoke attachment portions being heat fused to one of said outer and inner annular portions, respectively.

17. A bicycle wheel comprising:  
an annular rim including  
an outer annular portion adapted to receive a tire thereon, said outer annular portion having a plurality of circumferentially spaced outer spoke attachment openings,  
an inner annular portion fixedly coupled with said outer annular portion to form an annular hollow area therebetween, said inner annular portion having a plurality of circumferentially spaced inner spoke attachment openings aligned with said outer spoke attachment openings,  
a plurality of first tubular spoke attachment portions fixedly coupled to said outer annular portion at said outer spoke attachment openings,

each of said first tubular spoke attachment portions having a first internal bore,

a plurality of second tubular spoke attachment portions fixedly and directly coupled to said inner annular portion at said inner spoke attachment openings, each of said second tubular spoke attachment portions having a second internal bore that is aligned with one of said first internal bores to form a spoke receiving space, each spoke receiving space being at least partially threaded;

a plurality of spokes with each of said spokes including an outer end portion, an inner end portion and an elongated central portion extending between said outer end portion and said inner end portion, each of said outer end portions of said spokes being integrally formed with one of said elongated central portions as a one-piece, unitary member, each of said outer end portions of said spokes being directly threadedly coupled within one of said spoke receiving spaces; and

a central hub with said inner end portions of said spokes coupled thereto.

18. The bicycle wheel according to claim 17, wherein said first tubular spoke attachment portions are heat fused to said outer annular portion.

19. The bicycle wheel according to claim 18, wherein said second tubular spoke attachment portions are heat fused to said inner annular portion.

20. The bicycle wheel according to claim 17, wherein said second tubular spoke attachment portions are heat fused to said inner annular portion.

21. The bicycle wheel according to claim 17, wherein each of said first tubular spoke attachment portions is integrally formed with one of said second tubular spoke attachment portions to form a one-piece, unitary member with a longitudinally extending internal passageway that forms said spoke receiving space.

22. The bicycle wheel according to claim 21, wherein each of said internal passageways is a through bore.

23. The bicycle wheel according to claim 21, wherein each of said internal passageways is a blind bore.

24. The bicycle wheel according to claim 17, wherein said first tubular spoke attachment portions are separate members from said second tubular spoke attachment portions such that each of said first and second internal bores partially defines one of said spoke receiving spaces.

25. The bicycle wheel according to claim 24, wherein each of said first and second internal bores is at least partially threaded.

26. The bicycle wheel according to claim 17, wherein said first tubular spoke attachment portions are at least partially located within said outer spoke attachment openings; and  
said second tubular spoke attachment portions are at least partially located within said inner spoke attachment openings.

27. The bicycle wheel according to claim 26, wherein said first tubular spoke attachment portions extend radially inwardly from said outer annular portion into said hollow area of said rim; and  
said second tubular spoke attachment portions extend radially outwardly from said inner annular portion into said hollow area of said rim.

28. The bicycle wheel according to claim 17, wherein at least one of said first tubular spoke attachment portions and said second tubular spoke attachment portions is welded to one of said outer and inner annular portions, respectively.

29. The bicycle wheel according to claim 17, wherein

at least one of said first tubular spoke attachment portions and said second tubular spoke attachment portions is brazed to one of said outer and inner annular portions, respectively.

30. The bicycle wheel according to claim 17, wherein
  - each of said inner end portions of said spokes includes a threaded shaft section that is integrally formed with one of said elongated central portions as a one-piece, unitary member, and
  - each of said threaded shaft sections is coupled to said central hub via a spoke nipple threadedly mounted thereon.